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Atty Docket No. 0928.0043C

EDELL SHAPIRO & FINNAN, LLC.  
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Appl. No. : 10/802,728  
Applicant : Oliver Broermann et al.  
Filed : March 18, 2004  
TC/A.U. : Unknown  
Examiner : Unknown  
Confirmation No. : Unknown  
Docket No. : 0928.0043C  
Customer No. : 27896  
Title : Method for Measuring a Characteristic Dimension of at  
Least One Pattern on a Disc-Shaped Object in a Measuring  
Instrument

TRANSMITTAL LETTER

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Transmitted herewith is a translation of the International Preliminary Examination  
Report.

The Commissioner is hereby authorized to charge payment of any additional fees required  
for the above-identified application or credit any overpayment to Deposit Account No. 05-0460.

Respectfully submitted,

Heather Morin

Registration No. 37,336

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Hand-delivered: May 7, 2004

Translation

PATENT COOPERATION TREATY

PCT/DE2002/003492



PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P2001,0676WO	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/DE2002/003492	International filing date (day/month/year) 17 September 2002 (17.09.2002)	Priority date (day/month/year) 28 September 2001 (28.09.2001)
International Patent Classification (IPC) or national classification and IPC H01L 21/66		
Applicant INFINEON TECHNOLOGIES AG		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of \_\_\_\_\_ sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 25 April 2003 (25.04.2003)	Date of completion of this report 28 August 2003 (28.08.2003)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/DE2002/003492

## I. Basis of the report

### 1. With regard to the elements of the international application:\*

☒ the international application as originally filed

☒ the description:

pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

☒ the claims:

pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, as amended (together with any statement under Article 19  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

☒ the drawings:

pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

☐ the sequence listing part of the description:

pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

### 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item. These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).  
☐ the language of publication of the international application (under Rule 48.3(b)).  
☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

### 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority in written form.  
☐ furnished subsequently to this Authority in computer readable form.  
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.  
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

### 4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_  
☐ the claims, Nos. \_\_\_\_\_  
☐ the drawings, sheets/fig \_\_\_\_\_

### 5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

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## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

Novelty (N)	Claims	1-10	YES
	Claims		NO
Inventive step (IS)	Claims	1-10	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-10	YES
	Claims		NO

## 2. Citations and explanations

The present prior art (see pages 1-4 of the description of the present patent application) discloses a process for measurement of a characteristic dimension of at least one structure on a disk-like object in a measuring device comprising a lens system and a computing and control unit. In the process, the at least one structure is made in at least one production step and subsequently checked by the measurement. The known process comprises at least the following measuring steps:

- measurement of at least one adjustment mark for adjusting the earmarked disk-shaped object with respect to the lens system of the measuring device;
- measurement of the at least one structure for recognition of same on the disk-shaped object,
- measurement of the at least one structure for focusing the lens system to achieve a sharp image of the at least one structure;
- measurement of the characteristic dimension of the at least one structure.

The subject matter of claim 1 differs therefrom in the following features:

- a) a particular parameter (P1, P2, P3, P4 ) and a particular algorithm for determining the value of the parameter (P1, P2, P3, P4 ) are assigned to at least one of the measuring steps, said parameter representing the quality of a completed measurement step,
- b) a limiting value is assigned to the parameter (P1, P2, P3, P4),
- c) the computer and control unit calculates the value of the parameter (P1, P2, P3, P4 ) from the measurement data obtained from the at least one measurement step using the algorithm,
- d) the computing and control unit compares the calculated value of the parameter with the associated limiting value.
- e) if at least one of the limiting values is exceeded, at least one of the production steps required to make the disk-shaped object is repeated.

These characterizing features solve the following problem:

that of improving the quality of a CD (critical dimension) -measurement.

The above-mentioned process reduces the number of objects separated out due to a limiting value having been exceeded. Moreover, manufacturing defects and measuring errors are more easily recognized during quality control

**INTERNATIONAL PRELIMINARY EXAMINATION REPORT**

International application No.

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of the disk-shaped objects. The combination of features, in particular of the distinguishing features, to solve the above-mentioned problem is neither known from nor suggested by the available prior art nor is the solution in the form of the distinguishing features obvious to a person skilled in the art (an evident solution given knowledge of the problem). The subject matter of claim 1 is therefore novel and involves an inventive step. Since dependent claims 2-10 directly or indirectly refer back to claim 1, they too are novel and involve an inventive step.